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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/573,824

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Hatsuhiko Harashina

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EXAMINER

LEUNG, WAYNE K

ART UNIT

PAPER NUMBER

4171

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/573,824	Applicant(s) HARASHINA, HATSUHIKO	
	Examiner Wayne K. Leung	Art Unit 4171	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>03/29/2006</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-7, 9-10, 13-18 are rejected under 35 U.S.C. 102(b) as being anticipated by Harashina (WO 2001/05888). US Patent 6,753,363 B1 is a national stage application of the WO document and is used as an English translation thereof. See *MPEP 901.05*.

Harashina teaches a resin composition comprising a polyacetal resin and a basic nitrogen-containing compound, (Col. 2, lines 49-51), wherein the basic nitrogen-containing compound may be a hydrazide, with examples given of terephthalic acid, naphthalenedicarboxylic acids, biphenylenedicarboxylic acids, 1,4,5,8-naphthoic acid, and polyhydrazides of C₇₋₁₆ aromatic polycarboxylic acids derivatives thereof (Col. 30, lines 7-32), which corresponds to claims 1-3 of the instant claims. Harashina further teaches that the nitrogen-containing compound is selected within the range of 0.01 to 80 parts by weight, and most preferably 0.1 to 15 parts by weight per 100 parts of the polyacetal resin (Col. 31, lines 37-50), with examples 1-24 falling within the range cited by instant claim 4. Thus, the prior art anticipates claim 4.

Regarding claim 5, Harashina teaches that the resin composition may contain additives such as antioxidants, heat stabilizers, fillers, a colorant, weather (light)

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resistant stabilizer, a slip agent, and impact resistance improvers (Col. 31, lines 52-56, Col 35, lines 37-54). The examples of antioxidants such as 2,6-di-t-butyl-p-cresol and 1,3,5-trimethyl-2,4,6-tris(3,5-di-t-butyl-4-hydroxybenzyl)benzene (Col. 32, lines 23-51), and the examples of heat stabilizers such as 4-methoxy-2,2,6,6-tetramethylpiperidine and 4-benzyloxy-2,2,6,6-tetramethylpiperidine are free of intramolecular ester bonds (Col. 33, lines 28-51). Therefore, this would anticipate the instant claim 6, as one may choose to incorporate these intramolecular ester-free bonds in the resin. Regarding claim 7, Harashina teaches that the phenol-series antioxidants include hindered phenols (Col 32, lines 23-51). Regarding claims 9 and 10, Harashina teaches the use of nitrogen-containing compounds as heat-stabilizers (Col. 33, lines 28-51) as well as the use of alkaline or alkaline earth metal-containing compounds, particularly organic carboxylic acid metal salts (calcium acetate, calcium citrate, magnesium stearate, and calcium stearate), as well as zeolite and hydrotalcite (Col. 35, line 64 through Col. 36 line 5).

Regarding claim 13, Harashina teaches examples of impact resistance improvers include core/shell polymers constituted of polyurethane or rubbery copolymers and glassy shell polymers (Col. 35, lines 51-53). Regarding claim 14, Harashina teaches that examples of a slip agent include silicone resin, fluororesin, and polyolefinic resin (Col. 35, lines 41-42).

Regarding claims 15 and 16, the process of mixing a polyacetal resin with an aromatic compound, a basic nitrogen-containing compound (of which includes the carboxylic acid hydrazides) and kneading and extruding the mixture is taught by

Harashina (Col. 36, lines 43-65). The resulting material may be molded to give a shaped article using the composition taught in instant claim 1, and also taught by Harashina. Regarding claim 17, the applicant states in the specifications that "the amount of formaldehyde emission from the shaped article can be effectively reduced by a smaller amount of the specific carboxylic acid hydrazide. Further, in the case of using the specific carboxylic acid hydrazide and the heat stabilizer (formaldehyde inhibitor) in combination, the amount of formaldehyde emission can be also inhibited to a large extent." The prior art has taught in the examples that a resin which conforms to the specifications given in the applicant's instant claims can be made, which thus would inherently also conform to the guidelines for emission of formaldehyde in claim 17.

Regarding claim 18, Harashina teaches that examples of articles that may be made using the composition are mechanical parts in the automobile field, electric system-related parts, audio equipment, car navigation equipment, living-related parts such as lighting equipment and fittings, and construction or piping material (Col. 37, lines 25-60).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Harashina (WO 2001/05888).

Harashina teaches the use of silicon-containing compounds, including (poly)organosiloxanes such as dialkylsiloxanes, alkylarylsiloxanes, diarylsiloxanes, other monoorganosiloxanes, and homopolymers thereof (e.g., polydimethylsiloxane, polyphenylmethylsiloxanes) and copolymers thereof (Col. 34, lines 50-59) for use as a flame retardant. In the instant application, the specifications disclose that a processing stabilizer may be a silicone-series compound, examples of which include the stated compounds. Although the intended use is different, the compounds used in the prior art may be used in the capacity taught by the applicant, and the prior art would be motivated to add the compound due to its properties as a flame retardant.

5. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Harashina (WO 2001/05888) in view of Schuette et al. (US patent 4,386,178).

Harashina teaches a resin composition comprising a polyacetal resin and a basic nitrogen-containing compound, (Col. 2, lines 49-51), wherein the basic nitrogen-containing compound may be a hydrazide. Harashina further teaches that the resin composition may contain additives such as antioxidants, heat stabilizers, fillers, a colorant, weather (light) resistant stabilizer, a slip agent, and impact resistance improvers (Col. 31, lines 52-56, Col 35, lines 37-54). Harashina does not teach the use of an alkaline earth metal salt of a hydroxyl acid as heat stabilizers.

Schuetz et al, however, teaches that heat stabilizers, including metal salts of hydroxyl-substituted carboxylic acids have been used as heat stabilizers in the protection of polyacetals (Col. 1, lines 13-23). Harashina and Schuetz et al. are combinable because both are teaching in the same field of endeavor, namely the use of a heat stabilizer in a polyacetal resin. At the time of the invention, it would have been obvious to employ the additives taught by Schuetz et al. as a possible alternative in the resin as taught by Harashina.

6. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Harashina (WO 2001/05888) in view of Sugiyama et al. (US patent 4,929,712).

Harashina teaches a resin composition comprising a polyacetal resin and a basic nitrogen-containing compound, (Col. 2, lines 49-51), wherein the basic nitrogen-containing compound may be a hydrazide. Harashina further teaches that the resin composition may contain additives such as antioxidants, heat stabilizers, fillers, a colorant, weather (light) resistant stabilizer, a slip agent, and impact resistance improvers (Col. 31, lines 52-56, Col 35, lines 37-54). Harashina does not teach examples of weather (light)-resistant stabilizers.

Sugiyama, however, teaches that a polyacetal resin may include additives including antioxidants, heat stabilizers, and weather (light) stabilizers), which include benzotriazoles, benzophenones, and aromatic benzoates, listing for example 2-(2'-hydroxy-5'-methylphenyl)benzotriazole and 2-(3,5-di-t-amyl-2-hydroxyphenyl)benzotriazole among others (Col. 5, lines 1-4, lines 46-56). Harashina

and Sugiyama et al. are combinable because both are teaching in the same field of endeavor, namely the use of additives in a polyacetal resin. At the time of the invention, it would have been obvious to employ the additives taught by Sugiyama et al. in the resin as taught by Harashina.

Priority

7. Acknowledgment is made of applicant's claim for foreign priority under 35 U.S.C. 119(a)-(d). A copy of the priority document was received.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Wayne K. Leung whose telephone number is (571)270-5460. The examiner can normally be reached on M-Th 8:30-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Larry Tarazano can be reached on 571-272-1515. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/D. Lawrence Tarazano/
Supervisory Patent Examiner, Art Unit 4174

Wayne K Leung
Examiner
Art Unit 4171